

**SM3H 8.2 Proving Trig. Identities (key-selected answers)**

When proving identities you must show each step!

1.  $-\cos^2 x$

3.  $\csc^2 x + 2 + \sin^2 x$

5.  $(2 \sin x + 1)(\sin x - 3)$

7.  $(2 \sec x + 1)^2$

9.

$$\sin(\theta) \cot(\theta) = \cos(\theta)$$

$$\sin(\theta) \frac{\cos(\theta)}{\sin(\theta)} = \cos(\theta)$$

$$\cos(\theta) = \cos(\theta) \Delta$$

13.

$$\tan(\theta) \cos(\theta) + \csc(\theta) \sin^2(\theta) = 2 \sin(\theta)$$

$$\frac{\sin(\theta)}{\cos(\theta)} \cos(\theta) + \frac{1}{\sin(\theta)} \sin^2(\theta) = 2 \sin(\theta)$$

$$\sin(\theta) + \sin(\theta) = 2 \sin(\theta)$$

$$2 \sin(\theta) = 2 \sin(\theta) \Delta$$

17.

$$\frac{\csc x + 1}{\csc x - 1} = \frac{1 + \sin x}{1 - \sin x}$$

$$\frac{\frac{1}{\sin x} + 1}{\frac{1}{\sin x} - 1} \cdot \frac{\sin x}{\sin x} = \frac{1 + \sin x}{1 - \sin x}$$

$$\frac{1 + \sin x}{1 - \sin x} = \frac{1 + \sin x}{1 - \sin x} \Delta$$

19.  $x = 0, \pi \quad x \approx .3, 2.8$

21. use Quadratic Formula

$$x \approx .7, 2.4, 6, 3.4$$

#22-24 you cannot solve until we learn 8.4 sorry

25.  $\theta \approx 26.6^\circ, 206.6^\circ$

27.  $\theta \approx 318.2^\circ, 221.8^\circ$